

Appendix P

Leachate Generation Information



COMPUTATION SHEET

SHEET 1 OF 3

744 Heartland Trail (53717-8923) P. O. Box 8923 (53708-8923) Madison, WI (608) 831-4444 FAX: (608) 831-3334 VOICE: (608) 831-1989

PROJECT/PROPOSAL NAME Veolia Emerald Park Landfill	PREPARED		CHECKED		PROJECT/PROPOSAL NO. 20655.22
	By: N. Braun	Date: 1/9/08, 12/2/08	By: K. Pawlisch	Date: 3/24/08, 12/3/08	

LEACHATE GENERATION CALCULATION FOR A LANDFILL

Purpose:

To estimate the daily volume of leachate that will be collected during operation and after closure, for the Southwestern Horizontal Expansion at the Veolia Emerald Park Landfill (VEPL).

Methodology:

Estimate the volume of leachate generated daily based on the areas of the open and closed portions of the landfill using the leachate generation rates included in NR 512.12(3).

NR 512.12(3) establishes the following leachate generation rates to be used:

- 6 inches per year for all unclosed areas that have a composite liner
- 1 inch per year for all closed areas that have a composite cap
- 3 inches per year for all closed areas that do not have a composite cap

Assumptions:

1. A leachate generation rate of 3 inches per year was assumed for areas with intermediate cover in place, given the steep slopes and the intermediate cover soil, which will promote runoff and limit infiltration.
2. The operational leachate generation rates were calculated on a phase-by-phase basis for the Southwestern Horizontal Expansion to determine the peak leachate generation rate. The phases will have 50 percent intermediate cover and 50 percent closed for the applicable scenarios. The areas for each phase of development are as follows:
 - Existing VEPL closed area – 74.4 acres (Existing landfill is approved for 82.3 acres, this calculation assumes 7.9 acres of Phase 6 of the existing landfill is included with Phase 7 of the new expansion)
 - Phase 7 open – 21.8 acres
Existing VEPL closed area – 74.4 acres
 - Phase 8 open area – 19.9 acres
Phase 7 intermediate cover – 10.9 acres
Phase 7 closed area – 10.9 acres
Existing VEPL closed area – 74.4 acres
 - Phase 9 open area – 27.2 acres
Phase 8 intermediate cover – 9.95 acres



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SHEET 2 OF 3

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- Phase 7 and 8 closed area – 31.72 acres
 - Existing VEPL closed area – 74.4 acres
 - Phase 10 open area – 10.2 acres
 - Phase 9 intermediate cover – 13.6 acres
 - Phase 7, 8, and 9 closed area – 55.28 acres
 - Existing VEPL closed area – 74.4 acres
 - Phase 7, 8, 9, and 10 closed area – 79.11 acres
3. The post-closure leachate generation rate occurs when all phases of the Southwestern Horizontal Expansion have final cover. The area of the Southwestern Horizontal Expansion is 79.11 acres, which includes 7.9 acres that was previously approved with the existing landfill and added to Phase 7 of the new expansion.
 4. Leachate generation from the existing VEPL after closure will be included with the generation from the Southwestern Horizontal Expansion.

Conclusions:

During operational conditions, the estimated worst-case leachate generation rate is approximately 22,256 gpd, which includes leachate generation from the Existing VEPL. This generation rate corresponds to the scenario with Phase 9 open, intermediate cover over a portion of Phase 8, and a final cover over Phases 7 and 8. During post-closure conditions, the estimated leachate generation rate is approximately 5,885 gpd from the Southwestern Horizontal Expansion, for a total leachate generation rate (including the Existing VEPL) of approximately 11,420 gpd.



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Refer to the table below for a summary of the estimated leachate generation rates for each stage of landfill development.

LANDFILL PHASE	ESTIMATED LEACHATE GENERATION RATE (gpd) ⁽¹⁾	
	EXPANSION	TOTAL SITE ⁽²⁾
Phase 7 - Open	9,730	15,265
Phase 7 - Closed	12,126	17,661
Phase 7 - Intermediate Cover		
Phase 8 - Open		
Phase 7 - Closed	16,721	22,256
Phase 8 - Closed		
Phase 8 - Intermediate Cover		
Phase 9 - Open		
Phase 7 - Closed	11,700	17,235
Phase 8 - Closed		
Phase 9 - Closed		
Phase 9 - Intermediate Cover		
Phase 10 - Open		
Phase 7, 8, 9, and 10	5,885	11,420

Note:

(1) Because of rounding of areas in the attached table, calculated leachate generation rates may not correspond exactly to Phase areas shown on the attached table.

(2) Total site includes leachate generation rates for the Southwestern Horizontal Expansion and 5,535 gpd from the closed Existing VEPL.



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Madison, WI 53717
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PROJECT: Veolia Emerald Park Landfill Southwestern Horizontal Expansion		PROJECT:
SUBJECT: Leachate Generation Rates		20655.22
PREPARED BY: N. Braun	DATE: 1/8/07, 12/2/08	FINAL <input type="checkbox"/>
CHECKED BY: K. Pawlisch	DATE: 3/24/08, 12/3/08	REVISION <input type="checkbox"/>

LEACHATE GENERATION FOR A LANDFILL

Leachate Generation Rate = (Area in acres)x(Annual Precipitation Depth)x(Conversion Factor)

Conversion Factor = ((43560 sf/ac)x(7.48 gal/cf))/((12 in/ft)x(365 days/yr))

Landfill Phase Status	Cell Number(s)	Annual Precipitation	Phase Area	Leachate Generation Rate
		(inches)	(acres)	(gpd)
Area Construction Description # 1				
Open Conditions		6.0		0
Intermediate Condition		3.0		0
Closed Condition	Existing VEPL	1.0	74.4	5,535
Total				5,535
Area Construction Description # 2				
Open Conditions	7	6.0	21.80	9,730
Intermediate Condition		3.0		0
Closed Condition		1.0		0
Total				9,730
Area Construction Description # 3				
Open Conditions	8	6.0	19.90	8,882
Intermediate Condition	7	3.0	10.90	2,433
Closed Condition	7	1.0	10.90	811
Total				12,126



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Conversion Factor = ((43560 sf/ac)x(7.48 gal/cf))/((12 in/ft)x(365 days/yr))

Landfill Phase Status	Cell Number(s)	Annual Precipitation	Phase Area	Leachate- Generation Rate
		(inches)	(acres)	(gpd)
Area Construction Description # 4				
Open Conditions	9	6.0	27.2	12,140
Intermediate Condition	8	3.0	10.0	2,221
Closed Condition	7, 8	1.0	31.7	2,360
Total				16,721
Area Construction Description # 5				
Open Conditions	10	6.0	10.2	4,553
Intermediate Condition	9	3.0	13.6	3,035
Closed Condition	7, 8, 9	1.0	55.3	4,112
Total				11,700
Area Construction Description # 6				
Open Conditions		6.0		0
Intermediate Condition		3.0		0
Closed Condition	7, 8, 9, 10	1.0	79.11	5,885
Total				5,885